

marked version of the specification is presented below. Replacement pages are attached in the appendix.

Applicant respectfully requests reconsideration of the specification.

§112 Rejection of the Claims

Claims 1-3 were rejected under 35 U.S.C. 112, second paragraph. Claims 1-3 are cancelled.

§1.83(a) Rejection of the Drawings

The drawing was rejected under 37 C.F.R. 1.183(a), second paragraph. Claims 1-3 are cancelled and the drawing is amended to comply with 37 C.F.R. 1.183(a), second paragraph.

The drawing has been amended to comply under 37 C.F.R § 1.83(a) and § 1.84(p)(5). No new matter is believed to be added with this amendment.

Applicant respectfully requests reconsideration of the specification.

Objection of the Specification

The specification was rejected because of informalities. The specification has been amended to address the objection.

Objection of the Claims

The claims were rejected because of informalities. The claims were canceled.

§102 Rejection of the Claims

The drawing has been amended to comply under 37 C.F.R § 1.83(a) and § 1.84(p)(5). No new matter is believed to be added with this amendment.

§102 and § 103 Rejection of the Claims

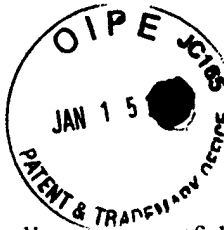
Claim 1 was rejected under 35 U.S.C. 102(b) as being anticipated by Luenser (U.S. 3,931,727). Claim 1 is cancelled rendering the rejection moot.

Claim 3 was rejected under 35 U.S.C. 102(b) as being anticipated by Hughes (5,667,035). Claim 3 is cancelled rendering the rejection moot.

Claim 2 was rejected under 35 U.S.C. 103(a) as being anticipated by Reite et al. (6,167,670). Claim 2 is cancelled rendering the rejection moot.

Cited References

Applicant considered the references cited in the Office Action. Applicant cannot find in the references the combination of a tower assembly defining a vertical track, a container that is slidably coupled to the track, a pair of pulleys mounted at the top of the tower assembly and a pair of sheaves mounted at the bottom of the tower assembly, a pair of lifting cables each mounted to one of the sheaves and extended over one of the corresponding pulleys and coupled to the container, the sheaves fixedly mounted to a rotatable cylindrical shaft which encases a drive motor which rotates the cylindrical shaft to either wind or unwind the cable to raise or lower the container. Such a combination provides for the safety of a two cable redundant system, the low profile drive motor negating the need to floor-mount the motor, the safety of a direct drive motor eliminating a drive belt that could break, among other benefits.

Conclusion

Applicant respectfully submits that the specification is now in compliance and that the claims are in condition for allowance. The Examiner is invited to telephone Applicant's attorney (503-796-2767) to facilitate prosecution of this application. A Facsimile copy of a Declaration and Power of Attorney is enclosed. The original copy has been mailed to the undersigned attorney and will be available to the examiner if required.

Respectfully submitted,

WAYNE M. SLAGLE

By his Representatives,

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RECEIVED
JAN 24 2002
GROUP 3600

Date Dec 6, 2001

By

Paul J. Fordenbacher
Reg. No. 42,546

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on this 6 day of Dec., 2001.

Name

PATSY R FRYE

Signature

Fax (503) 796-2900

Marked Version of the Specification**[TITLE OF INVENTION]**

The title of the invention is a dumb waiter elevating and lowering platform device. The inventor is Wayne M. Slagle, 1228 N.E. 193rd Ave, Portland, Oregon, 97230 and a citizen of the United States of America.

CROSS-REFERENCE TO RELATED APPLICATIONS

5,465,808 Nov., 1995 Musgrove 182/2

An elevating system elevates a payload platform between a first position and a second position, such elevating system having a stowed position, an operational position, and a fully deployed position.

5,667,035 Sept., 1997 Huges 182/142

An overhead platform elevating device for moving objects between a lower level of a building and an overhead storage space is provided including a rectangular platform having a base plate and a centrally disposed supporting surface, a motor assembly, opposed pulley assemblies, a plurality of platform adjustment cables, drive cables and telescoping stabilization members.

2,996,151 Olson

Dumb Waiter lifting platform

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not applicable

REFERENCE TO A MICROFICHE APPENDIX

Not applicable

BACKGROUND OF THE INVENTION]

DUMBWAITER ELEVATING AND LOWERING PLATFORM**Field of the Invention**

The present invention relates to dumbwaiter elevating and lowering platforms and, more particularly, to motor-driven platforms for use in confined spaces and especially useful in residential applications.

Background of Invention

The first dumbwaiters were screw drive. The current winding drum is the most popular type of drive, consisting of a drive motor connected to a gear reducer by either direct drive or V-belts. The drum winds a cable to raise the load and several limit switches are used to set the travel limits. A disc brake is used to lock and hold the input or output shafts. The drive mechanism normally mounts below the platform, limiting the lower travel unless the drive is located below ground. Also, the platform car is usually made of sheet metal [which] that allows any spilled materials to leak down the wall, inside the hoistway. Some systems allow for mechanical operation [y] by pulling on a rope that[], through a set of pulleys on a common shaft, raises or lowers the platform car connected to a rope.

There is a need for a dumbwaiter that does not require that the drive mechanism be located below ground in order for the platform to reach the lower level of travel. Further, there is a need for a dumbwaiter that has fewer components and easier to install.

Summary of Invention

[BRIEF SUMMARY OF INVENTION]

An elevating system that moves a payload container or platform from one elevation to another. Such an elevating system allows the platform to stop at pre-determined positions as needed between floors of a building or residences by depressing a “raise”, “lower” or “stop” switch. A remote control module permits operation from a location within visual sight of the switch. The lift mechanism is comprised of a low

profile torque motor integral to the rotating cylinder that wraps a cable, which through a system of pulleys, raises the payload. The low profile motor allows the payload to lower to a ground position without a hole below ground for the motor and is mounted to the bottom of the tower. The payload is lowered by reversing the rotation of the motor with gravity acting on the payload. The motor incorporates an integral electromagnetic brake. Also incorporated into the low profile motor is a rotary counter that sets the stop locations of the platform without the use of limit switches in the hoist way. The container is a single piece, made of roll molded plastic. A lip surrounds the front opening and prevents spills from exiting the container and dripping down the inside walls of the hoist way.

[BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING]

None enclosed

[DETAILED DESCRIPTION OF THE INVENTION]

Brief Description of Drawings

Figure 1 is a perspective partial cut-away view of a dumbwaiter in accordance with an embodiment of the invention.

Figure 2 is a front view of the pivoting mount for the pulleys.

Description

In the following detailed description, reference is made to the accompanying drawing which form a part hereof and in which is shown by way of illustration a specific embodiment in which the invention may be practiced. It is to be understood that other embodiments may be utilized and structural or logical changes may be made without departing from the scope of the present invention. Therefore, the following detailed description is not to be taken in a limiting sense, and the scope of the present invention is defined by the appended claims and their equivalents.

The following description will be directed to a dumbwaiter incorporating the commercially available SOMFY HiPro LT50 motor, by SOMFY SYSTEMS, INC.,

Cranbury, NJ, as described in "The SOMFERY HiPro LT50 Motor Line" product catalogue, 1996, incorporated herein by reference, and at www.somfysystems.com. However, it is to be understood that other motors of substantially similar design can also be used to practice the invention.

Figure 1 is a perspective view of a dumbwaiter 28 in accordance with an embodiment of the invention. The dumbwaiter 28 provides a platform or container 7 that has the capability to raise or lower at the control of the user for carrying supplies up or down one or more levels of a building. The dumbwaiter 28 can be used, for example, but not limited to, in a residential installation to raise groceries or other supplies from a lower level to an upper level.

The dumbwaiter 28 comprises a tower assembly 4, a drive motor 1, a pair of cables 3, a pulley system 2, and a platform connection 5 upon which a container 7 is mounted. The drive motor 1 located adjacent a tower lower portion 20 and the pulley system 2 is located adjacent the tower top portion 21. The drive motor 1 winds or unwinds the pair of cables 3 which are directed through the pulley system 2 and coupled to the platform connection 5. The platform connection 5 is guided and supported by the tower assembly 4 as the platform connection 5 is raised and lowered.

The high torque, low profile drive motor [assembly, item] 1[,] mounts to the base 20 of the tower assembly[, item] 4[,]. In one embodiment in accordance with the invention, the drive motor 1 is the commercially available SOMFY HiPro LT50 motor (SOMFY SYSTEMS, INC., Cranbury, NJ). The SOMFY HiPro LT50 motor is an asynchronous motor, an electromagnetic disk brake, planetary gear mechanism, and limit switch integrated into a compact cylinder-shaped housing. An end ring drives an outer shaft casing 30 in a clockwise or counter-clockwise direction, the number of revolutions in each direction being controlled by the limit switch.

Coupled to the outer shaft casing 30 are two spaced-apart sheaves 11 which revolve with the outer shaft casing 30. The sheaves 11 are spaced apart such that they are on either side of the tower 4. Coupled to each sheave 11 is a cable 3 that winds and unwinds, on and off, respectively, the sheaves 11 with the revolution of the outer shaft 30. Coupled to the drive motor 1 is a cable guide bar 32 that directs the cables 3 onto and off of the two sheaves 11.

The cables 3 are [The motor drive 1 contains two 2" radius sheaves, items 11, that wrap the cable, items 3, that is] connected through a pulley system[, item] 2[,] that is mounted to the uppermost portion of the tower 4. The pulley [assembly] system 2 is mounted in such a way as to allow for slight changes in cable 3 length due to cable 3 extension or winding problems from side to side. Figure 2 shows the pulley system 2 comprising a pivoting mount 36 for the pulleys allowing for variations in cable length during operation while still having balanced tension in each cable. Coarse adjustment of the length of each cable 3 is provided by turnbuckles[, item] 12[,], coupled between the cables 3 and[at] the platform connection[, item] 5[]. The two cable 3 arrangement provides for a redundant cable 3 for safety in case one cable 3 is severed, as one cable 3 is sufficient to support the platform connection 5. Since the two sheaves 11 are coupled to the same outer shaft casing 30, the cables 3 are unwound or rewound in even fashion such that the platform connection 5 remains level and balanced.

NS The tower assembly[, item] 4[,], is provided in multiple sections 25 to allow [it]each section to be fed [though] through the access door of the hoist way rather than having to build the hoist way around a single piece tower. The tower assembly 4 mounts to the rear wall 8 of the hoist way with the use of lag bolts 22[to be a fully self contained drive unit when assembled].

The container[, item] 7[,], is [a]of one piece [item]construction, custom made from a roll mold process, that mounts onto the platform connection[, item] 5[,], that is attached to the tower 4 and raised by the [cable]cables 3. Bushing material, not shown, provides [the] a low friction bearing surface between the platform connection 5 and the tower 4.

The controls 6 for raising, lowering, and stopping[, items 6,] the container 7 are mounted to walls near the access doors. The controls 6 are connected to the controller 9 that provides motor control[, item 9,] through a wiring harness[es, items] 10. The limit switch internal to the drive motor 1 is set to stop at various predetermined number of revolutions corresponding to the different levels. The limit switch being integral to the drive motor 1 eliminates the need to have individual limit switches at each level. The limit switch is based on counting the number of revolutions or partial revolutions of the outer shaft casing 30.

The electromagnetic brake which is integral with the drive motor 1 provides for a non-wearing, maintenance free, quiet and safe operation. The brake being integral to the drive motor 1 eliminates the need for a braking system on the platform connection. The drive motor 1 holds the platform connection 5 in a stationary locked position by default, and only releases the platform connection 5 during the raising or lowering operation.

The low profile of the drive motor 1 allows for a completely above-ground installation of the dumbwaiter 28. Further, since the motor, gears and brake are internal to the shaft 30, the drive motor 1 is especially quiet as compared with external motors and belt-driven pulleys and cable.

Although specific embodiments have been illustrated and described herein for purposes of description of the preferred embodiment, it will be appreciated by those of ordinary skill in the art that a wide variety of alternate and/or equivalent implementations calculated to achieve the same purposes may be substituted for the specific embodiments shown and described without departing from the scope of the present invention. Those with skill in the art will readily appreciate that the present invention may be implemented in a very wide variety of embodiments. This application is intended to cover any adaptations or variations of the embodiments discussed herein. Therefore, it is manifestly intended that this invention be limited only by the claims and the equivalents thereof.

What is claimed is:

[CLAIMS

What I claim as my invention is a space saving, low profile, high torque rotary drive system that integrates the brake and limit switches.

What I claim as my invention is a single piece container that is waterproof and has a lip to contain any spills for the use in a dumb waiter.

What I claim for my invention is a redundant, self adjusting parallel lifting pulley and cable system that acts as a lift and a secondary safety device.]

ABSTRACT OF THE DISCLOSURE

The invention is [a]an elevating system that is used to move a payload from different levels of a building, allowing it to stop [a]at different predetermined locations with the push of a button at the predetermined access locations. This system varies from existing systems in that it is driven by a low profile motor that has built in braking and limit switches. The motor assembly is mounted to the bottom of the tower and uses cables and pulleys to move the platform up and down. The low profile drive motor [system] eliminates the need for floor mounting of the drive motor [system], which normally limits the bottom foot of the travel and requires a hole or vault in the floor to make it a low profile system. That space is not needed for this design. Limit switches are normally needed at each stop to signal when the container has reached it's desired location, whereas, this invention has rotary limit switches, at the rotary drive motor, that count revolutions to control the stop locations. The pulley system has two independent cables for safety. Each of the cables has the ability to hold the load. A set of turnbuckles are used for coarse adjustment of the cables and a pivoting mount for the pulleys at the top allows for variations in cable length during operation while still having balanced tension in each cable. The container is a single piece of roll mold plastic with a lip to prevent spills from dripping down the walls of the hoist way.

WAYNE M. SLAGLE

